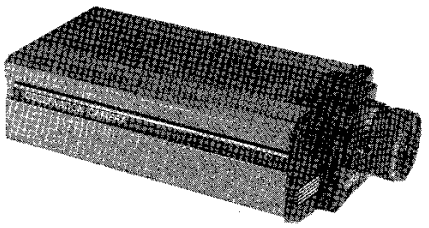
B.W.-Video camera VK4902/

00/05/20/25

Service
Service
Service



32 754A12

Service Manual

CONTENTS

Introduction
Dimensions
Technical data
Block diagram
Circuit diagram
Wiring diagram
Connections of semi conductors
Service adjustments
Survey of symbols
Exploded view
Service hints
List of mechanical parts
List of electrical parts

INTRODUCTION

VK4902 is a black and white video-camera with built-in microphone, to be used with a b.w.-t.v.-monitor.
The relevant t.v.-monitor supplies the required supply voltage for the camera via the HF-cable.
The HF-connection-cable is an ordinary coaxial cable with a male coax connector at both sides and may be extended upto 100 metres max.
The camera is suitable for limited outdoor use with protection cover; not fully splash proof; camera not to be exposed to direct sunlight.

DIMENSIONS

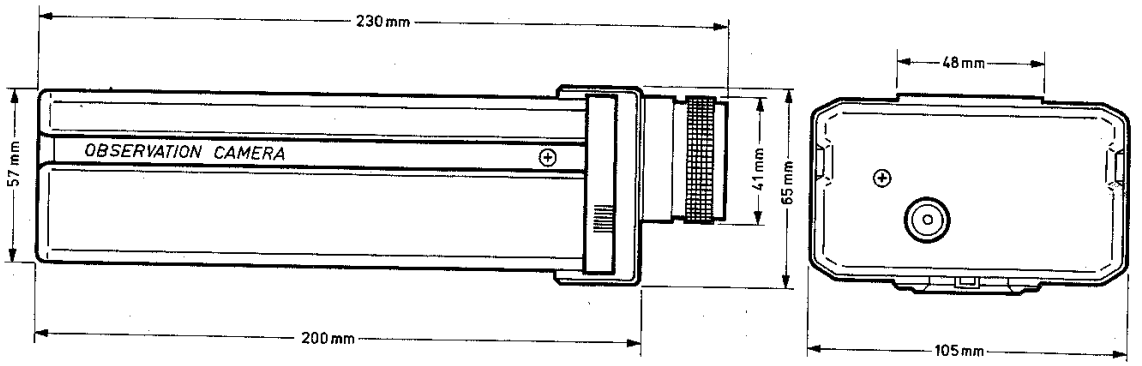


Fig. 1

32 756 B12.[523]

DocumentationTechnique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Servicio

Subject to modification

GB 4822 727 15367

Printed in The Netherlands

©Copyright reserved

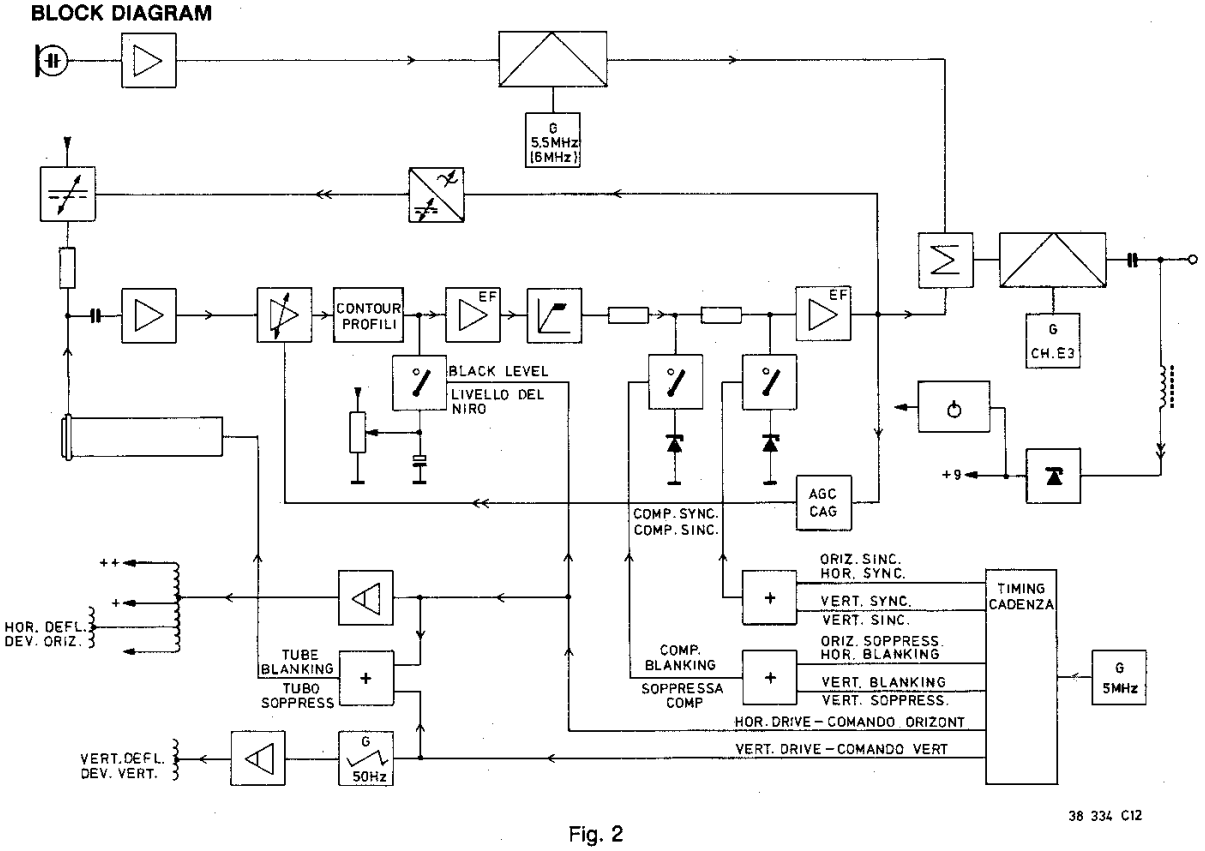
Published by
Service Consumer Electronics

TECHNICAL DATA

Supply voltage	:	12 V d.c. (10...15 V d.c.)
Power consumption	:	200 mA max. at 12 V d.c. 100 mA max. at 4 V d.c. (in stand-by mode)
Warming up time	:	≤5 sec. with "stand-by" immediate sound
Weight	:	about 650 grams
Cable length	:	100 m. max.
Mounting hole	:	$^1/_4$" B.S.W.
Allowed ambient temperature	:	−20 °C to +45 °C in operation −25 °C to +70 °C in storage
Allowed humidity	:	20% to 95% R.H. in operation upon 99% R.H. in storage
Air pressure	:	600 ... 1100 mBar
Pick up tube	:	$^2/_3$" hybrid vidicon type XQ1272
Illumination range	:	3 ... 30.000 Lux (automatic sensitivity control)

T.V. system -/00/20	:	CCIR 625 lines 50 Hz non-interlaced
-/05/25	:	CCIR-I 625 lines 50 Hz non-interlaced
Sync.	:	internal
Signal to noise ratio	:	≥40 dB (30...30.000 Lux)
Modulated RF output	:	Channel 4, with service switch for channel 3 level of spurious signals in output ≤ 30 dB at 3 MHz from carrier
Audio frequency -/00/20	:	F.M. modulated 5.5 MHz carrier
-/05/25	:	F.M. modulated 6 MHz carrier
Microphone	:	built-in electret
Lens	:	C-Mount
Focal length -/00/05	:	fixed 16 mm
Focal length -/20/25	:	fixed 8 mm
Relative aperture -/00/05	:	1.6
Relative aperture -/20/25	:	0.8
Focusing	:	with focus ring (1,2,5,10,∞)

BLOCK DIAGRAM



38 334 C12

Fig. 2

CIRCUIT DIAGRAM

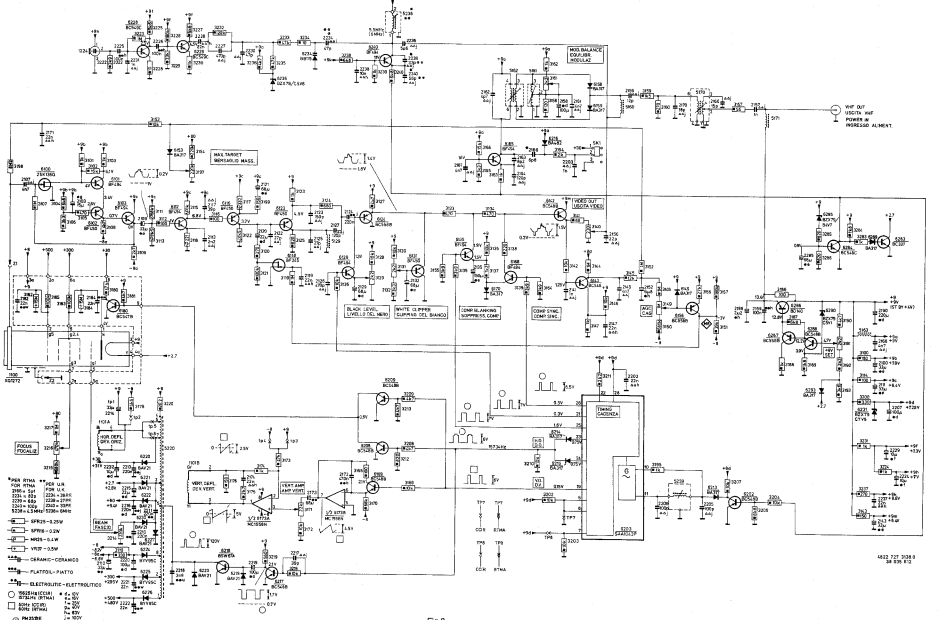


Fig.3

WIRING DIAGRAM

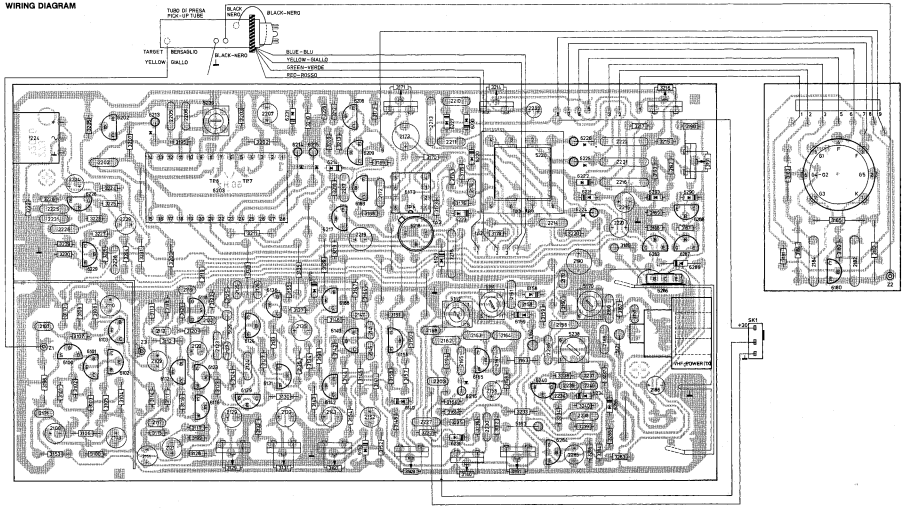


Fig.4

SERVICE ADJUSTMENTS (see Fig. 6)

Measuring equipment
Monitor receiver
Voltmeter
Frequency counter
Oscilloscope 1:1 probe
Thermometer
100 Watt " Argenta " lamp
Test charts 4822 733 23271
L.F. generator

1. Supply voltage

Connect a voltmeter to C-6286.
Adjust 3191 so that the meter reads 9 V ± 0,1 V

2. Pulse generator

Connect a frequency counter to K-6214/6215.
Adjust 5239 so that the counter reads 15625 Hz

3. Beam current

Put the lens cap on the lens.
Short B-6143 to mass.
Connect an oscilloscope to junction 3111/3112.
Put the lamp in front of the camera.
Remove the lens cap for max. 10 secs. and in this time, adjust 3214 for 450 mV_{pp} signal on 3111/3122.

4. Max. target voltage

Put the lens cap on the lens.
Short B-6143 to mass.
Connect an oscilloscope to junction 3111/3112.
Adjust 3197 for reading of:
12 mV_{pp} on junction 3111/3112 when the ambient temp. ≤24 °C, and 20 mV_{pp} on 3111/3112 when the ambient temp. >24 °C.

5. White clipper

Short B-6143 to mass.
Direct the camera to a well illuminated white subject (wall) and focus the lens.
Connect the oscilloscope to E-6142.
Adjust 3131 for a reading of 2,6 V VBS.

6. Black level

Focus the camera on the test chart.
Connect the oscilloscope to E-6142.
Adjust 3129 so that the black areas equal the blanking level.

7. A.G.C.

Short B-6143 to mass.
Short 3152.
Cover the lens. Connect the voltmeter to C-6156.
Adjust 3149 so that the voltage on C-6156 is −2,5 V.

8. Video modulation

Short B-6143 and B-6240 to mass.
Connect the oscilloscope to 2156 (wiper 3140).
Focus the camera to the test chart.
Adjust 3140 for 275 mV VBS on 2156.

9. Back focus

Put the camera on a distance of 1 m. from the test chart and put the lens focus ring on 1 m. Loosen screw A a few turns.
Shift the tube until the picture is as sharp as possible.
Tighten screw A.

10. Electrical focus

Focus the lens on e.g. the test chart.
Adjust 3216 so that the picture is as sharp as possible.

11. Picture tilt

Make sure the camera is in a horizontal position.
Remove the lens.
Loosen the four screws in the front a few turns.
Refit the lens.
Turn the deflection coil until the picture position is correct. Tighten the four screws again.

12. Picture geometry

Direct the camera to the test chart.
When the edge(s) of the vidicon target is (are) visible in the picture corners the horizontal scanning must be decreased. Thereto solderbridge tp5 must be closed and tp6 opened.
Now adjust the vertical amplitude with 3171 until the circle is round again.

13. Horizontal and vertical shift

If necessary the picture can be shifted horizontally by closing or opening solderbridge tp2, and vertically by closing either tp3 or tp4.

14. Beam alignment

Apply an AC signal of approx 10 V at 10 to 25 Hz to 7-1100 via a capacitor of 220 nF.
Turn the alignment rings of the deflection coil until the middle of the picture is stable.

15. Sound

Connect a frequency counter to the emittor of 6240 via a capacitor of 1 pF and mass.
Short-circuit the basis of 6229 with mass.
Adjust coil 5238 at 5,5 MHz for /00/20 and 6 MHz for /05/25.
Remove the short-circuit and the frequency counter.

16. RF oscillator and modulation balance

Note:
Both the RF modulator and modulation balance have been carefully adjusted in the factory, and do not need any readjustment by Service.
After necessary replacement of parts in this circuitry service adjustments can be executed as follows:

a. Tune the monitor receiver.
b. Tune coil 5162 for optimum picture and sound quality on the monitor screen.
c. Short 2156 via a 100 µF capacitor to mass.
   Short C-6168 to mass.
   Short B-6240 to mass.
   Apply the lens cap.
   Apply 0,41 V to 2156.
   Put potmeter 3161 in its mechanical mid position.
d. Adjust 5161 for minimum RF output.
e. Then adjust 3161 for minimum RF output.
   If necessary repeat d and e, until no further improvement is possible.

SERVICE ADJUSTMENTS

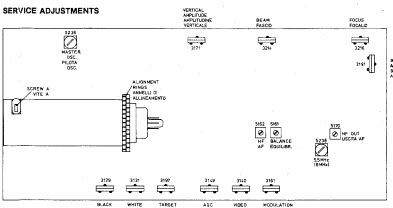
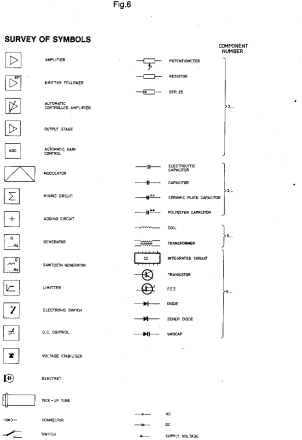


Fig.6

SURVEY OF SYMBOLS



EXPLODED VIEW

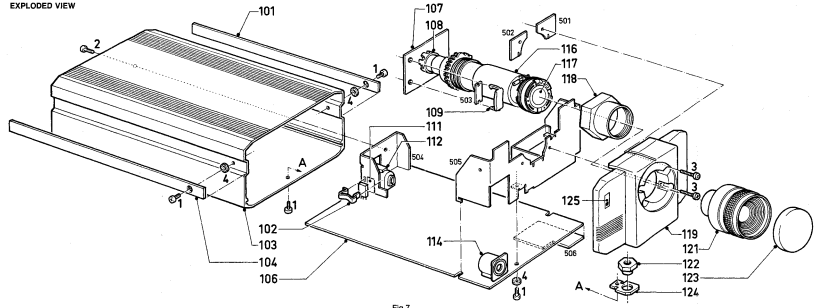


Fig.7

39 038 Dig

LIST OF ELECTRICAL PARTS

Various	
Pick-up tube XQ1272	4822 131 90054
Deflection coil	4822 150 10208
Microphone	4822 242 30112
Printed board assembly (only available during production)	4822 212 40061
Printed board tube socket (only available during production)	4822 212 40059
Tube socket	4822 255 70188
Coax. socket female	4822 265 10035

2166	4822 122 32187	6.8 pF-100 V
2214	4822 124 20945	33 µF- 10 V
3129	4822 100 10623	2.2 kΩ-potm.
3131	4822 100 10623	2.2 kΩ-potm.
3140	4822 100 10622	220 Ω-potm.
3149	4822 100 10621	1 MΩ-potm.
3161	4822 100 10623	2.2 kΩ-potm.
3171	4822 100 10624	22 kΩ-potm.
3186	4822 116 51886	100 Ω
3191	4822 100 10623	2.2 kΩ-potm.
3197	4822 100 10625	220 kΩ-potm.
3198	4822 110 72212	8.2 MΩ
3214	4822 100 10625	220 kΩ-potm.
3216	4822 100 10626	470 kΩ-potm.
5129	4822 157 51247	
5160	4822 157 51235	
5161	4822 156 10562	
5162	4822 156 40765	
5163	4822 157 51235	
5170	4822 156 30822	
5171	4822 157 51235	
5220	4822 140 10191	Line transformer
5238	4822 156 20989	
5239	4822 156 20989	

BA317	4822 130 30847	
BAV21	4822 130 30842	
BYV95C	4822 130 41487	
BZX79/B4V7	4822 130 34174	
BZX79/C5V1	4822 130 34233	
BZX79/C5V6	4822 130 34173	
BZX79/C7V5	4822 130 30861	
BB119	4822 130 31273	
2SK136Ω	4822 130 41665	FET
BF494	4822 130 44195	
BF450	4822 130 44237	
BF245	4822 130 30951	
BC546	4822 130 41001	
BC547B	4822 130 40959	
BC548B	4822 130 40937	
BC548C	4822 130 44196	
BC549C	4822 130 44246	
BC558B	4822 130 44197	
BC337	4822 130 40855	
BD140	4822 130 40824	
BSW67A	5322 130 44788	
MC1558N	5322 209 85766	
SAA1043P	5322 209 81468	

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

LIST OF MECHANICAL PARTS

1	Screw M3x5	4822 502 11526
2	Screw M3x10	4822 502 11513
3	Screw M3x16	4822 502 11514
4	Lock washer 3.2x6	4822 530 80216
101	Strip right	4822 459 10674
102	Clip	4822 255 40128
103	Casing	4822 432 80064
104	Strip left	4822 459 10675
106	Printed board	*
107	Printed board	*
108	Tube socket	*
109	Clamp	4822 401 10705
111	Insulating plate	4822 255 40133
112	Coax socket	*
114	Microphone	*
116	Deflection coil	*
117	Pick-up tube	*
118	C-mount bush	4822 505 10651
119	Front	4822 432 80063
121	Lens 16 mm	4822 381 20065
121	Lens 8 mm	4822 381 20087
122	Tripod nut	4822 505 10652
123	Lens cap	4822 462 40457
124	Tripod plate	4822 466 81638
125	Slide switch	4822 277 20692
	Camera support	4822 256 90397

*) See list of electrical parts.